What is Claimed is:

1. A method for identifying a muscle protective agent comprising assessing the ability of a potential muscle protective agent to increase MLC1 phosphorylation.

2. The method of claim 1 wherein the ability of the potential muscle protective agent to increase MLC1 phosphorylation is assessed *in vitro* in purified myosin, purified myosin light chain 1, or purified isoforms thereof, or in myofilament or skinned muscle fibers.

3. The method of claim 1 wherein the ability of the potential muscle protective agent to increase MLC1 phosphorylation is assessed in isolated myocytes or whole hearts either isolated using Langendorff apparatus or *in vivo*.

4. A composition which protects cardiac and skeletal muscles from damage comprising a muscle protective agent which increases MLC1 phosphorylation and a biocompatible carrier.

5. The composition of claim 4 wherein the agent is not adenosine.

6. A composition which protects cardiac and skeletal muscles from damage comprising a muscle protective agent identified in accordance with the method of claim 1.

7. A method of protecting cardiac and skeletal muscle from damage comprising contacting the cardiac or skeletal muscle with the composition of claim 4.

8. The method of claim 7 wherein the damage to the cardiac or skeletal muscle is caused by a cardiomyopathy, hypertension, free radicals, ischemia, hypoxia, heart failure, surgery, heart arrest, heart transplant, angioplasty, or ischemia/hypoxia with reperfusion

9. A method for altering contractility of cardiac or skeletal muscle comprising modulating MLC1 phosphorylation in the cardiac or skeletal muscle.

10. A method for evaluating protection of a subject from damage to cardiac or skeletal muscle comprising monitoring phosphorylation status of MLC1 in the subject.

11. A method for assessing cardiac or skeletal muscle disease status in a subject comprising monitoring phosphorylation status of MLC1 in the subject.

12. A method for identifying new therapeutic targets as muscle protective agents comprising identifying kinases or phosphatases that act on MLC1 phosphorylation.

13. A cardioplegia solution comprising an agent which increases MLC1 phosphorylation.

14. The method of claim 2 wherein the myosin, myosin light chain 1, or isoforms thereof are obtained from a biological sample using IN Sequence extraction.

15. The method of claim 11 wherein the MLC1 is obtained from a biological sample using IN Sequence extraction.